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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
FILING DATE UNDER 35 USC 111.**

APPLICATION NUMBER: 60/544,357

FILING DATE: February 17, 2004

PRIORITY DOCUMENT
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H. L. JACKSON
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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

02/19/2004 ANABII 00000038 60544357
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PTO-1556
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PTO/SB/17 (10-03)

Approved for use through 07/31/2008. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)

80

Complete If Known

Application Number	
Filing Date	
First Named Inventor	MAX HERZBERG
Examiner Name	
Art Unit	
Attorney Docket No.	33

METHOD OF PAYMENT (check all that apply)

Check Credit card Money Order Other None

 Deposit Account:

Deposit Account Number	
Deposit Account Name	

The Director is authorized to: (check all that apply)

Charge fee(s) indicated below Credit any overpayments
 Charge any additional fee(s) or any underpayment of fee(s)
 Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee			
1002 340	2002 170	Design filing fee			
1003 530	2003 265	Plant filing fee			
1004 770	2004 385	Release filing fee			
1005 160	2005 80	Provisional filing fee	80		

SUBTOTAL (1) (\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Independent Claims	Multiple Dependent	Fee from below	Fee Paid
			-20** =	x =
			-3** =	x =

Large Entity	Small Entity	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 .9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

** or number previously paid, if greater. For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath			
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet			
1053 130	2053 130	Non-English specification			
1812 2,520	1812 2,520	For filing a request for ex parte reexamination			
1804 820*	1804 920*	Requesting publication of SIR prior to Examiner action			
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action			
1251 110	2251 55	Extension for reply within first month			
1252 420	2252 210	Extension for reply within second month			
1253 950	2253 475	Extension for reply within third month			
1254 1,480	2254 740	Extension for reply within fourth month			
1255 2,010	2255 1,005	Extension for reply within fifth month			
1401 330	2401 165	Notice of Appeal			
1402 330	2402 165	Filing a brief in support of an appeal			
1403 260	2403 145	Request for oral hearing			
1451 1,510	1451 1,510	Petition to institute a public use proceeding			
1452 110	2452 55	Petition to revive - unavoidable			
1453 1,330	2453 665	Petition to revive - unintentional			
1501 1,330	2501 665	Utility issue fee (or reissue)			
1502 480	2502 240	Design issue fee			
1503 640	2503 320	Plant issue fee			
1460 130	1460 130	Petitions to the Commissioner			
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)			
1806 180	1806 180	Submission of Information Disclosure Stmt			
8021 40	8021 40	Recording each patent assignment per property (times number of properties)			
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))			
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))			
1801 770	2801 385	Request for Continued Examination (RCE)			
1802 900	1802 900	Request for expedited examination of a design application			

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

(Complete if applicable)

SUBMITTED BY	ROBERT VASL	Registration No. (Attorney/Agent)	Telephone 97235344675
Name (Print/Type)	RV	Date	2/7/04
Signature			

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PROVISIONAL PATENT APPLICATION

5 Title: **AN IMPROVED CELL CONTAINER**

FIELD AND BACKGROUND OF THE INVENTION

10 The present invention relates to an improved cell container and, more particularly, to a container which delays adhesion of cells thereto. A convenient environment for the study of functional cytomics of living cells is a substrate such as a tissue culture plate. A cell container or a cell chip is described in PCT patent application number WO 03/035824
15 to Deutsch filed 25 October 2001 wherein the observation and manipulation of single cells or a multiplicity of cells in their own individual well is enabled. The use of this cell chip is particularly advantageous for cells such as primary cells, cell lines, and hematopoietic cells and is applicable for both adherent and non-adherent cell types etc
20 wherein a plurality of cells, even from a mixed source of cell types, may be studied as individual cells which have their own particular address or known location in such a cell chip.

However a problem may occur in such a system if the cells that are ready to be manipulated or observed were to grow or proliferate prematurely before the system was ready to be studied, following the initial seeding and prior to manipulation or observation. Newly grown cells present in this system may be problematic as these new cells were not accounted for when the original substrate was seeded.

5 An additional problem may arise if cells that were placed into a container such as the abovementioned cell chip were to be displaced unexpectedly from their addressed coordinate. This could be the case if, 10 for example, cells in a suspension that were introduced into the cell chip and underwent typing and/or location identification processes such as described in the abovementioned prior art were to be moved around too rapidly by jolting a cell chip as it is being transporting from one location to another.

15 Cell culture containers are typically constructed so that adherent cells placed therein adhere to a surface thereof. Adherent cell growth/replication is typically dependent upon adherence. Even adherent cells can be displaced from their well by a jolt. There are circumstances in which there is a necessity for a delay in the time between when 20 adherent cell has been placed in a well during the initial seeding and when it becomes attached or adhered to the surface of the well. A delay in the attachment may be required following seeding and prior to the cell adhesion. Such a delay could, for example, allow the transportation of a

seeded tissue culture plate or a cell chip laden with cells to a remote location for study or manipulation as in the case of manufacturing in a commercial context for seeded tissue culture plates for sale to other consumers. Also a researcher who has seeded a cell chip may not want to commence work on the cell laden substrate immediately for many reasons and thus necessitating a delay in cell growth. Similarly for the same reasons there may be requirement for a delay in cell growth for non-adherent cells that had been placed into a cell container.

There is thus a widely recognized need for, and it would be highly advantageous to have, an improved cell container and method of use thereof devoid of the above limitations.

SUMMARY OF THE INVENTION

According to the present invention there is provided an improved cell container which discourages adhesion of cells thereto.

According to further features in preferred embodiments of the invention described below, discouragement is achieved by use of a coating which delays adhesion of cells thereto.

According to further features in preferred embodiments of the invention described below, discouragement is achieved by construction from a material which delays adhesion of cells thereto.

According to still further features in the described preferred embodiments, the adhesion delaying coating has a formulation that includes silicon,

According to still further features in the described preferred embodiments, discouragement is achieved by coating or suspending cells in a gel.

According to still further features in the described preferred 5 embodiments, the gel contains a defined media.

The present invention successfully addresses the shortcomings of the presently known configurations by providing containers which postpone cell growth/replication.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

The invention is herein described, by way of example only, with reference to the accompanying drawing. With specific reference now to the drawings in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred 15 embodiments of the present invention only, and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention, the 20 description taken with the drawing making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

In the drawing:

FIG. 1 is a cross-sectional view of a container according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 The present invention is of an improved cell container. Specifically, the present invention can be used to prevent adhesion of cells to an inner surface thereof.

10 The principles and operation of a cell container according to the present invention may be better understood with reference to the drawings and accompanying descriptions.

15 Before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawing. The invention is capable of other embodiments or of being practiced or carried out in various ways. Also, 20 it is to be understood that the phraseology and terminology employed herein is for the purpose of description and should not be regarded as limiting.

25 Referring now to the drawing, Figure 1 illustrates the container 20. Cells 50 are inserted into container 20. Preferably container 20 is divided into a plurality of compartments 22. Most preferably, each compartment 22 is large enough to accommodate a single cell 50, but too small to accommodate two cells 50. According to some preferred embodiments of the invention the compartments 22 may contain a plurality of cells.

Inner surface 24 of container 20 discourages adhesion of cells thereto. Preferably discouragement is achieved by use of an adhesion delaying coating 25, for example a coating which has a formulation which includes silicon. An example of such a silicon is PDMS (polydimethylsiloxane) (RTV615 available from GE silicones). Alternately, all or most of container 20 is constructed of adhesion delaying material 25.

Alternately, or additionally, discouragement is achieved by coating or suspending cells in a gel 26. Preferably, the gel includes a defined media. An example of such a Gel is Hi Gel strength low melting temperature Agarose. (available from Bio Wittaker Molecular Application). A non-limiting method of placing the cells in the gel is by initially suspending the cells in a gel such as the Hi Gel mentioned above at room temperature and after introducing the liquid cell gel suspension into the cellchip, spinning or centrifuging the cell laden container. During the spinning the cells sediment towards the well bottom 24. In this non-limiting example the gel may then be hardened/solidified either prior to or following typing and coordinate identification by cooling. This method of taking either non-adherent cells such as blood cells or adherent cells such as liver cells and coating them in a gel and suspending them physically close to the bottom of the wells in a cellchip where they may remain even though the cellchip may undergo shaking and jolting is an inherent advantage of this invention.

A method of preventing cell growth or replication includes delaying adhesion of cells to inner surface of container.

It will be appreciated that cells 50, despite their lack of growth/proliferation, remain viable in their non-adherent state.

The invention makes it possible, for the first time, to send cells in suspension with a given address to each cell. This possibility includes, but is not limited to, shipping a mixture of cells (such as bone marrow) which are suspension/non-adherent cells after having detected the address of each kind of cells. Any extra cells apparent upon receipt are cells generated during transport. Using prior art technology, a mixture of cells was an unorganized compilation. The present invention transforms it into a characterized mosaic. This invention also enables the shipping and moving of adherent cells that remain in place in gel during transportation.

By using this same gel-silicon method, it is now possible to delay cell growth in either adherent or non-adherent cells.

It is appreciated that certain features of the invention, which are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention, which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable subcombination.

Although the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, it is intended to embrace all such alternatives, modifications and variations that fall

within the spirit and broad scope of the appended claims. All publications, patents and patent applications mentioned in this specification are herein incorporated in their entirety by reference into the specification, to the same extent as if each individual publication, patent or patent application was 5 specifically and individually indicated to be incorporated herein by reference. In addition, citation or identification of any reference in this application shall not be construed as an admission that such reference is available as prior art to the present invention.

WHAT IS CLAIMED IS:

1. An improved cell container which discourages adhesion of cells thereto essentially as described hereinabove or depicted in the figure.
2. A method for the retention of a cell within a well of a container.

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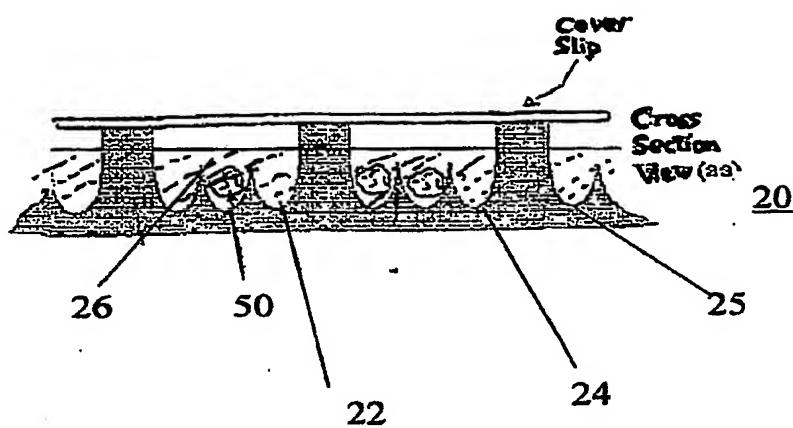


Figure 1

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